

# SVM Multi-Classs Classification

Nipun Batra

IIT Gandhinagar

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# SVM Multi-Classs Classification

## 1. One v/s All

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$$\left. \begin{array}{l} \text{Blue (+1) v/s All (-1) : } \overline{w} \cdot \overline{x}_{test} + b = 0.8 \\ \text{Yellow (+1) v/s All (-1) : } \overline{w} \cdot \overline{x}_{test} + b = 0.6 \\ \text{Red (+1) v/s All (-1) : } \overline{w} \cdot \overline{x}_{test} + b = -0.2 \end{array} \right\} \text{argmax} = \text{Blue}$$

# SVM Multi-Classs Classification

## 1. One v/s One

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Majority = Blue

# SVM Multi-Classs Classification

## 1. One v/s One

1 Blue v/s Yellow  $\rightarrow$  Blue

Majority = Blue

# SVM Multi-Classs Classification

## 1. One v/s One

- 1 Blue v/s Yellow  $\rightarrow$  Blue
- 2 Yellow v/s Red  $\rightarrow$  Red

Majority = Blue

# SVM Multi-Classs Classification

## 1. One v/s One

1 Blue v/s Yellow  $\rightarrow$  Blue

2 Yellow v/s Red  $\rightarrow$  Red

3 Red v/s Blue  $\rightarrow$  Blue

Majority = Blue



# Support Vector Regression

Hard Margin or  $\epsilon$ -SVR

$$\hat{y}(x) = \overline{w} \cdot \overline{x} + b$$